

## **REDUCTION OF CARROT DEFECTS IN SILICON CARBIDE EPITAXY**

### **ABSTRACT**

Single crystal silicon carbide epitaxial layer on an off-axis substrate are  
5 manufactured by placing the substrate in an epitaxial growth reactor, growing a first  
layer of epitaxial silicon carbide on the substrate, interrupting the growth of the first  
layer of epitaxial silicon carbide, etching the first layer of epitaxial silicon carbide to  
reduce the thickness of the first layer, and regrowing a second layer of epitaxial  
silicon carbide on the first layer of epitaxial silicon carbide. Carrot defects may be  
10 terminated by the process of interrupting the epitaxial growth process, etching the  
grown layer and regrowing a second layer of epitaxial silicon carbide. The growth  
interruption/etching/regrowth may be repeated multiple times. A silicon carbide  
epitaxial layer has at least one carrot defect that is terminated within the epitaxial  
layer. A semiconductor structure includes an epitaxial layer of silicon carbide on an  
15 off-axis silicon carbide substrate, and a carrot defect having a nucleation point in the  
vicinity of an interface between the substrate and the epitaxial layer and is terminated  
within the epitaxial layer.